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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,222	10/03/2003	Gaston S. Ormazabal	03-1510	3274
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VERIZON PATENT MANAGEMENT GROUP 1515 N. COURTHOUSE ROAD SUITE 500 ARLINGTON, VA 22201-2909			EXAMINER JOHNSON, CARLTON	
			ART UNIT 2136	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/679,222	ORMAZABAL ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Carlton V. Johnson	2136	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-321 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This action is responding to application papers filed on **10-3-2003**.
2. Claims **1 - 32** are pending. Claim **1** has been amended. Claims **1, 7, 14, 20, 25** are independent.

### *Response to Arguments*

3. Applicant's arguments filed 9/13/2007 have been fully considered but they are not persuasive.

3.1 Applicant argues that the referenced prior art does not disclose, "*port opening delay*" and "*port closing delay*". (see *Remarks Pages 12, 23*) ; "*a port closing delay time*". (see *Remarks Page 16*)

A delay is defined as the time period between two events. Namely, for the opening of a port event, the delay is the time period between a closed port state and an open port state. And, for the closing of a port event, the delay is the time period between an open port state and a closed port state. The Katz prior art discloses a time calculation for opening a port and closing a port. This time calculation includes a time delay portion calculation. Katz discloses the calculation of multiple types of delay and an opening and closing delay is well known in the art. (see Katz paragraphs [0011] and [0012]: multiple types of delay)

The applicant states that Katz does not disclose "monitoring" on page 13, line 3, then applicant states that Katz "monitors" on page 13, line 6. Both statements cannot be true. The Katz prior art discloses monitoring to reach a determination for a delay

value for opening and closing ports (session communications interface).

In order to adjust a value, the current state of a value namely the delay time (time period between closed and opened states or between opened and closed states) must first be determined, and then the value can be adjusted. The Katz prior art discloses the determination of a port opening time period and a port closing time period. The delay value is the time period for a transition from one state to the next state.

3.2 Applicant argues that the referenced prior art does not disclose, *"transmitting sessions signals at an increasing rate"*. (see Remarks Page 14) ; *"signal to cause the closing of the port is detected"* (see Remarks Page 17) ;

A session is established between two network connected entities (nodes) indicated by the linking of an IP address location and the opening of a port at that particular IP address. Therefore, the opening of a port is effectively the establishment of a communications session (session signaling). The opening and closing of a port initiates and terminates a communications session. The Katz prior art discloses the dynamic adjustment (increasing) of session signaling information (session opening and session closing). (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust port opening, port closing) Any additional functions the Katz prior art discloses such as adjustments in timing parameter does not remove the fact that the Katz prior art discloses session signaling at a changing (increasing) rate as per claim limitation.

3.3 Applicant argues *the MeLampy et al. reference rejections*. (see Remarks Page 16)

The MeLampy prior art is not used to supply any noted deficiencies of the Katz prior art. There are no deficiencies in the Katz prior art. The Office Action clearly states the claims limitations that the MeLampy prior art is used to reject.

3.4 Applicant argues that the referenced prior art does not disclose, *"pre-selected maximum closing delay time"*. (see Remarks Page 18)

The Katz prior art discloses a predetermined time parameter value used in the monitoring of port opening and closing. (see Katz paragraph [0024], lines 5-9: delay; paragraph [0025], lines 7-9: port action (i.e. open, close), predetermined value)

3.5 Applicant argues that the referenced prior art does not disclose, *"determining a time when said test signals first pass through said at least one port"*. (see Remarks Page 19)

The Katz prior art discloses a time stamp for communications that pass through a communications session (session signaling) interface. The opening of a port is a communications initiation function and is the first signal to pass through a communications session interface. (see Katz paragraph [0014], lines 4-9; paragraph [0016], lines 5-10: time stamp communications processing; paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: session signaling, port opening, port closing, communications session established, terminated))

3.6 Applicant argues that the referenced prior art does not disclose, *"measuring the effect of the increasing rate of session signals on port closing delays"*. (see Remarks Page 21)

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The Katz prior art discloses monitoring (required for measuring) utilizing time stamps for communications whereby determining the effect of session signaling (opening ports and closing ports). (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5; paragraph [0024], lines 5-9: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination; paragraph [0014], lines 4-9; paragraph [0016], lines 5-10: time stamp for session communications)

3.7 Applicant argues *"rejection dependent claims"*. (see Remarks Pages 22, 24, 26)

The arguments against the dependent claims are based on the arguments for the independent claims 20, 25 and 30. Due to the successful responses to the arguments against independent claims 20, 25 and 30, the arguments against dependent claims 21-24, 26-29 and 31-32 have also been successfully responded to.

3.8 The examiner has considered the applicant's remarks concerning a test method for IP packet networks that verifies the proper functioning of a dynamic pinhole filtering implementation as well as quantifying network vulnerability statistically, as pinholes are opened and closed is described. Specific potential security vulnerabilities that may be addressed through testing include: 1) excessive delay in opening pinholes, resulting in an unintentional denial of service; 2) excessive delay in closing pinholes, creating a closing delay window of vulnerability; 3) measurement of the length of various windows of vulnerability; 4) setting a threshold on a window of vulnerability such that it triggers an alert when a predetermined value is exceeded; 5) determination of incorrectly allocated pinholes, resulting in a denial of service; 6) determining the opening of extraneous



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pinhole/IP address combinations through a firewall which increase the network vulnerability through unrecognized backdoors; and 7) determining the inability to correlate call state information with dynamically established rules in the firewall.

Applicant's arguments have thus been fully analyzed and considered but they are not persuasive.

After an additional analysis of the applicant's invention, remarks, and a search of the available prior art, it was determined that the current set of prior art consisting of Katz (20040039938), Bearden (20020112073), McLampy (20020112073) and McClure (20030195861) discloses the applicant's invention including disclosures in Remarks dated September 13, 2007.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims **1 - 5, 7 - 12, 14 - 18, 30, 31** are rejected under 35 U.S.C. 102(e) as being anticipated by **Katz et al.** (US PG PUB No. **20040039938**).

**Regarding Claim 1**, Katz discloses a method of testing a firewall comprising:

- a) transmitting at least one of a session initiation signal to initiate a communications session through said firewall and a session termination signal used to terminate an established communications session; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: session signaling, port opening, port closing, communications session established, terminated) and
- b) monitoring to determine from the time of at least one transmitted signal at least one of a port opening delay which occurs in regard to opening a port in said firewall for a communications session that is being initiated and a port closing delay which occurs in regard to closing a port in said firewall when terminating an established communications session. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5; paragraph [0024], lines 5-9: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination)

**Regarding Claim 2,** Katz discloses the method of claim 1, further comprising:

- a) transmitting session signals at an increasing rate through said firewall to cause at least one of the opening and closing of ports in said firewall; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust port opening, port closing) and
- b) measuring the effect of said increasing rate of session signals on at least one of an opening and a closing delay time associated with opening a port and closing a port, respectively, in response to transmitted session signals. (see Katz



paragraph [0030], lines 1-4; paragraph [0034], lines 1-5; paragraph [0024], lines 5-9: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination)

**Regarding Claim 3**, Katz discloses the method according to claim 1, wherein said at least one of a port opening delay and a port closing delay is a port closing delay. (see Katz paragraph [0014], lines 2-8; paragraph [0024], lines 5-9: port closing delay, acknowledgement response)

**Regarding Claim 4**, Katz discloses the method of claim 3, further comprising:

- a) transmitting session signals at an increasing rate through said firewall to cause at least one of the opening and closing of ports in said firewall; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust (i.e. increasing rate) port opening, port closing) and
- b) measuring the effect of said increasing rate of session signals on at least one of an opening and a closing delay time associated with opening a port and closing a port, respectively, in response to said session signals. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5; paragraph [0024], lines 5-9: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination)

**Regarding Claim 5**, Katz discloses the method of claim 4, further comprising:

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determining an average closing delay for each of a plurality of different session signaling rates. (see Katz paragraph [0030], lines 1-4: compute timings of port opening, closing delays)

**Regarding Claim 7**, Katz discloses a method of testing a network firewall comprising:

- a) transmitting a session signal to terminate an ongoing communications session being conducted through at least one port of said firewall; (see Katz paragraph [00027], lines 6-9: terminate session, port closing) and
- b) measuring a port closing delay time associated with the closing of said at least one port following the transmission of said signal to terminate said communications session. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5: monitor, port opening delay, port closing delay, communications acknowledgement; paragraph [0027], lines 6-9: session termination, port closing)

**Regarding Claim 8**, Katz discloses the method of claim 7, wherein said port closing delay is a time period which occurs between the time a signal used to cause the closing of the port is detected and said port ceases to allow communications signals to pass through from the first side of said firewall to the second side of said firewall. (see Katz paragraph [0027], lines 6-9: port closing (i.e. opening, or closing); paragraph [0024], lines 5-9: port closing delay determination)

**Regarding Claim 9**, Katz discloses the method according to claim 8, further comprising

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the steps of: transmitting test signals at said port prior to the closing of said port; and monitoring the port to determine when said test signals cease passing through said port.

(see Katz paragraph [0024], lines 5-9: time period to measure response acknowledgement, port closing delay)

**Regarding Claim 10**, Katz discloses the method of claim 7, further comprising:

- a) repeating said initiating transmitting and measuring steps while increasing a rate of session signals sent to said firewall to load said firewall; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust (i.e. increasing rate) port opening, closing) and
- b) monitoring changes in port closing delay times in response to said increasing rate of session signals to determine effect of increasing levels of session signaling on closing delay times. (see Katz paragraph [0034], lines 1-5: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination)

**Regarding Claim 11**, Katz discloses the method of claim 10, further comprising:

determining the level of session signaling that causes a closing delay time which exceeds a preselected maximum closing delay time. (see Katz paragraph [0024], lines 5-9: delay; paragraph [0025], lines 7-9: port action (i.e. open, close), predetermined value)

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**Regarding Claim 12**, Katz discloses the method of claim 10, further comprising:

determining the amount of firewall processing power required for a particular application based on an expected traffic load and said monitored information indicating the effect of session signaling of different loads on said closing delay. (see Katz paragraph [0034], lines 5-8: load balance processing)

**Regarding Claim 14**, Katz discloses a method of testing a network firewall, comprising:

- a) transmitting a session signal to initiate a communications session to be conducted through said firewall; (see Katz paragraph [0031], lines 2-4: session initiation)
- b) transmitting test signals to at least one port on a first side of said firewall; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: port opening, closing signals)
- c) determining a time when said test signals first pass through said at least one port, said at least one port being opened in response to said signal to initiate a communications session; (see Katz paragraph [0030], lines 1-4: time parameter utilized to open session) and
- d) determining a port opening delay which occurs in regard to opening a port in said firewall for said communications session from said determined time. (see Katz paragraph [0024], lines 5-9: port opening delay, acknowledgement response, delay determination)

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**Regarding Claim 15**, Katz discloses the method of claim 14, wherein said port opening delay is a time period which occurs between a time a signal used to cause the port for said communications session to open is detected and said port allows a signal to pass through from the first side of said firewall to the second side of said firewall. (see Katz paragraph [0024], lines 5-9: signal, acknowledgment sequence)

**Regarding Claim 16**, Katz discloses the method according to claim 15, further comprising the step of:

- a) transmitting another session signal to terminate said communications session;  
(see Katz paragraph [0027], lines 6-9: terminate close session) and
- b) monitoring a port closing delay time corresponding to a port closing delay which occurs in regard to closing the port in said firewall that was opened for said communications session. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5: monitor, port opening delay, port closing delay, communications acknowledgement, delay determination)

**Regarding Claim 17**, Katz discloses the method of claim 16, wherein said port closing delay is a time period which occurs between the time a signal used to cause the closing of the port is detected and said port ceases to allow communications signals to pass through from the first side of said firewall to the second side of said firewall. (see Katz paragraph [0024], lines 5-9; paragraph [0027], lines 6-9: determine delay, port closing communications session terminated)

**Regarding Claim 18**, Katz discloses the method of claim 14, further comprising the steps of:

- a) transmitting session signals at an increasing rate through said firewall to cause at least one of the opening and closing of ports in said firewall; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust (i.e. increasing rate) port opening, closing) and
- b) measuring the effect of said increasing rate of session signals on at least one of an opening and closing delay time associated with opening and closing ports, respectively, in response to said session signals. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5: monitor, port opening delay, port closing delay, communications acknowledgement)

**Regarding Claim 30**, Katz discloses a method of testing a firewall, comprising the steps of:

- a) transmitting session signals used to control at least one of the establishment and termination of communications sessions through said firewall at an increasing rate; (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: dynamically adjust (i.e. increasing rate) port opening, closing rate) and
- b) measuring the effect of the increasing rate of session signals on port closing delays associated with the termination of communications sessions through said firewall. (see Katz paragraph [0030], lines 1-4; paragraph [0034], lines 1-5:



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monitor, port opening delay, port closing delay, communications  
acknowledgement)

**Regarding Claim 31**, Katz discloses the method of claim 30, further comprising;  
determining the session signal rate, which results in a maximum acceptable port closing  
delay being exceeded. (see Katz paragraph [0024], lines 5-9; paragraph [0025], lines 7-  
9: predetermined value for delay)

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all  
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Katz** in  
view of **Bearden et al.** (US PG PUB No. 20020112073).

**Regarding Claim 6**, Katz discloses the method of claim 5, further comprising: the  
average closing delay for a plurality of different session signaling rates. (see Katz  
paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: monitor (i.e. measure) effect of  
port opening and closing for a plurality of port openings, closings) Katz does not  
specifically disclose generating a visual display of a graph. However, Bearden in the  
same field of endeavor, communications (i.e. open, close) port processing, discloses

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wherein further comprising: generating a visual display of a graph. (see Bearden paragraph [0230], lines 1-10; paragraph [0231], lines 18-21; paragraph [0232], lines 1-5: visual display of network parameters)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by Bearden to enable the capability to generate a visual display of a graph. One of ordinary skill in the art would have been motivated to employ the teachings of Bearden in order to the capability for efficient and completeness in monitoring and analysis of the performance of network entities, and the integration of network measurement, analysis, and visualization of network performance. (see Bearden paragraph [0051], lines 1-7: “ ... *Thus, above-cited prior art techniques, while useful in particular circumstances, suffer from one or more limitations relating to completeness of monitoring or analysis of network entity performance, integration between network measurement, analysis and visualization, or in ease of use in connection with a variety of multimedia and other non-traditional applications. ...* ”)

8. Claims **13, 19, 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katz** in view of **MeLampy et al.** (US PG PUB No. **20020112073**).

**Regarding Claims 13, 19, 32**, Katz discloses the method of claims 7, 18, 31. (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: port opening, closing) Katz does not specifically disclose wherein said session signal is at least one of SIP and H.323 compliant signals. However, MeLampy in the same field of endeavor,

communications (i.e. open, close) port processing, discloses wherein said session signal is at least one of SIP and H.323 compliant signals. (see McLampy paragraph [0065], lines 1-11; paragraph [0077], lines 1-4; paragraph [0077], lines 10-18; paragraph [0085], lines 2-6: session signaling, SIP, H.323)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by McLampy to enable the capability whereby a session signal is a SIP and/or H.323 compliant signals. One of ordinary skill in the art would have been motivated to employ the teachings of McLampy in order to enable the efficient interoperation of a network type switch based on standards for networks communications interoperability. (see McLampy paragraph [0027], lines 9-15: “ ... *For example, to enable proper routing, each softswitch would have to share information about circuit availability to ensure proper route-around functionality as the network becomes full. Since there are currently no standards for accomplishing this, vendors have been building proprietary methods; and these proprietary methods may not interoperate correctly. ...* ”)

9. Claims **20, 21, 25, 26, 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katz** in view of **McClure et al.** (US PG PUB No. **20030195861**).

**Regarding Claim 20**, Katz discloses a firewall test apparatus, comprising:

- a) a session signaling module for generating session signals used to initiate a communications session to be conducted through a firewall to be tested and to terminate a communications session after it has been initiated; (see Katz

paragraph [0026], lines 1-4; paragraph [0027], lines 6-9: initiate communication session (i.e. port open) and terminate communications session (i.e. port close))

- c) a timing synchronization module for synchronizing operation of said firewall test apparatus to at least one of an external clock source and another firewall test apparatus; (see Katz paragraph [0015], lines 6-9: time synchronization) and

Katz discloses wherein an analysis module for determining at least a port closing delay from a session signal time, and detected to stop passing through a port in said firewall. (see Katz paragraph [0024], lines 5-9: port closing delay[ paragraph [0027], lines 6-9: terminate (i.e. stop) communications session; paragraph [0036], lines 1-2; paragraph [0036], lines 6-12: software, module) Katz does not specifically disclose a scanning probe generation module for generating probe signals to be directed at firewall ports, and time probe signals.

However, McClure in the same field of endeavor, communications (i.e. open, close) port processing, discloses:

- b) a scanning probe generation module for generating probe signals to be directed at firewall ports; (see McClure paragraph [0041], lines 11-16; paragraph [0162], lines 8-12; paragraph [0171], lines 1-4; paragraph [0172], lines 1-4: probe signal capability, port scanning capability)
- d) a time probe signals. (see McClure paragraph [0041], lines 11-16; paragraph [0162], lines 8-12; paragraph [0171], lines 1-4; paragraph [0172], lines 1-4: probe signal capability, port scanning capability)

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It would have been obvious to one of ordinary skill in the art to modify Katz as taught by McClure to enable a scanning probe generation module, and time probe signals. One of ordinary skill in the art would have been motivated to employ the teachings of McClure in order to enable a quantitative method to objectively compare the security of network systems. (see McClure paragraph [0009], lines 1-11: “ ... *Existing testing methods lack a standard, quantitative method for objectively comparing the security of a target network or target computer to other systems. Typically, a target network or target computer is ranked only as "high risk," "medium risk," or "low risk." However, such a three-tier system alone provides very little substantive feedback or comparative information about changes in the network over time, the relative weight of different vulnerabilities in determining the resulting risk level, or objective assessments of network security among otherwise heterogeneous network environment.* ”

**Regarding Claim 21**, Katz discloses the firewall test apparatus of claim 20, wherein said analysis module further includes means for determining at least a port opening delay from a session signal time associated with a session signal used to initiate a communications session. (see Katz paragraph [0024], lines 5-9: port opening delay) Katz does not specifically disclose time probe signals. However, McClure in the same field of endeavor, communications (i.e. open, close) port processing, discloses wherein time probe signals. (see McClure paragraph [0041], lines 11-16; paragraph [0162], lines 8-12; paragraph [0171], lines 1-4; paragraph [0172], lines 1-4: probe signal

capability, port scanning capability)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by McClure to enable the capability for time probe signals to start passing through a port. One of ordinary skill in the art would have been motivated to employ the teachings of McClure in order to enable a quantitative method to objectively compare the security of network systems. (see McClure paragraph [0009], lines 1-11)

**Regarding Claim 25**, Katz discloses a firewall test system for testing a firewall, comprising;

Katz discloses wherein a test signal generator for generating communications session initiation signals. And, a test signal analyzer for detecting probe signals passing through said first side of said firewall to said second side of said firewall and for determining port closing delays as measured from the time the test signal analyzer detects a signal used to close a port in said firewall and said analyzer ceases to detect test signals passing through said firewall (see Katz paragraph [0013], lines 5-9; paragraph [0026], lines 1-4: test signals to communications session initiation signals, port open) Katz does not specifically disclose probe signals directed at a first side of said firewall.

However, McClure in the same field of endeavor, communications (i.e. open, close) port processing, discloses:

- a) probe signals directed at a first side of said firewall; (see McClure paragraph [0041], lines 11-16; paragraph [0162], lines 8-12; paragraph [0171], lines 1-4;



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paragraph [0172], lines 1-4: probe signal capability, port scanning capability)

- b) probe signals (see Katz paragraph [0027], lines 6-9; paragraph [0024], lines 5-9:  
port open, close delays)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by McClure to enable the capability for probe signals. One of ordinary skill in the art would have been motivated to employ the teachings of McClure in order to enable a quantitative method to objectively compare the security of network systems. (see McClure paragraph [0009], lines 1-11)

**Regarding Claim 26**, Katz discloses the firewall test system of claim 25, wherein said test signal generator further includes: means for establishing a communications session through said firewall using session initiation signals. (see Katz paragraph [0026], lines 1-4: signal generation, establish communication session, port open; paragraph [0036], lines 1-2; paragraph [0036], lines 6-12: software, implementation means) Katz does not specifically disclose said probe signals. However, McClure in the same field of endeavor, communications (i.e. open, close) port processing, discloses wherein prior to transmitting at least some of said probe signals. (see McClure paragraph [0041], lines 11-16; paragraph [0162], lines 8-12; paragraph [0171], lines 1-4; paragraph [0172], lines 1-4: probe signal capability, port scanning capability)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by McClure to enable the capability for said probe signals. One of ordinary skill in the art would have been motivated to employ the teachings of McClure in order to

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enable a quantitative method to objectively compare the security of network systems.

(see McClure paragraph [0009], lines 1-11)

**Regarding Claim 27**, Katz discloses the firewall test system of claim 26, wherein said test signal generator includes means for synchronizing test signal generation to an outside clock source; and wherein said signal analyzer includes means for synchronizing device operation with said outside clock source. (see Katz paragraph [0015], lines 6-9; paragraph [0032], lines 1-12: clock (i.e. synchronization) based operations performed)

10. Claims **22, 23, 28, 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katz-McClure** and further in view of **MeLampy**.

**Regarding Claim 22**, Katz discloses the firewall test apparatus of claim 21, wherein said session signaling module includes means for increasing amounts of session signal traffic used to initiate and terminate communications sessions. (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: adjust port opening, closing) Katz does not specifically disclose flooding said firewall. However, MeLampy in the same field of endeavor, communications (i.e. open, close) port processing, discloses wherein flooding said firewall. (see MeLampy paragraph [0066], lines 6-8; paragraph [0127], lines 13-16: data flow flooding capability)

It would have been obvious to one of ordinary skill in the art to modify Katz as

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taught by MeLampy to enable the capability to flood said firewall. One of ordinary skill in the art would have been motivated to employ the teachings of MeLampy in order to enable the efficient interoperation of a network type switch based on standards for networks communications interoperability. (see MeLampy paragraph [0027], lines 9-15)

**Regarding Claim 23**, Katz discloses the firewall test apparatus of claim 22, wherein said analysis module includes: means for determining the effect of increasing amount of session signaling said firewall on the closing delays associated with terminating existing communications sessions. (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: adjust port opening, closing) Katz does not specifically disclose increasing amount of session signaling flooding. However, MeLampy disclose wherein increasing amount of session signaling flooding. (see MeLampy paragraph [0066], lines 6-8; paragraph [0127], lines 13-16: data flow flooding capability)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by MeLampy to enable the capability to increase the amount of session signaling flooding. One of ordinary skill in the art would have been motivated to employ the teachings of MeLampy in order to enable the efficient interoperation of a network type switch based on standards for networks communications interoperability. (see MeLampy paragraph [0027], lines 9-15)

**Regarding Claim 28**, Katz discloses the firewall test system of claim 27, wherein said test signal generator includes means for session signals which trigger the opening or

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the closing of ports in said firewall. (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: port opening, closing) Katz does not specifically disclose flooding said firewall with session signals. However, MeLampy in the same field of endeavor, communications (i.e. open, close) port processing, discloses wherein flooding said firewall with session signals. (see MeLampy paragraph [0066], lines 6-8; paragraph [0127], lines 13-16: data flow flooding capability)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by MeLampy to enable the capability to flood said firewall with session signals. One of ordinary skill in the art would have been motivated to employ the teachings of MeLampy in order to enable the efficient interoperation of a network type switch based on standards for networks communications interoperability. (see MeLampy paragraph [0027], lines 9-15)

**Regarding Claim 29**, Katz discloses the firewall test system of claim 28, wherein said test analyzer further includes: means for measuring the effect of increasing the rate of session signals on port closing times following the termination of a communications session. (see Katz paragraph [0034], lines 1-5: monitor adjustments (i.e. increasing rate) to ports dynamically opening, closing)

11. Claim **24** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Katz-McClure** and further in view of **Bearden** and further in view of **MeLampy**.

**Regarding Claim 24**, Katz discloses the firewall test apparatus of claim 23, further comprising: an output device for outputting increasing amounts of session signals on the closing delays associated with terminating existing communications sessions. (see Katz paragraph [0013], lines 5-9; paragraph [0030], lines 1-4: monitor (i.e. measure) effect of port opening and closing for a plurality of port openings, closings) Katz does not specifically disclose an output device for outputting a report. However, Bearden in the same field of endeavor, communications (i.e. open, close) port processing, discloses wherein an output device for outputting a report. (see Bearden paragraph [0230], lines 1-10; paragraph [0231], lines 18-21; paragraph [0232], lines 1-5: visual display of network parameters)

It would have been obvious to one of ordinary skill in the art to modify Katz as taught by Bearden to enable the capability to output a report. One of ordinary skill in the art would have been motivated to employ the teachings of Bearden in order to the capability for efficient and completeness in monitoring and analysis of the performance of network entities, and the integration of network measurement, analysis, and visualization of network performance. (see Bearden paragraph [0051], lines 1-7)

Katz-Bearden does not specifically disclose the effect of flooding said firewall. However, McLampy discloses wherein flooding said firewall. (see McLampy paragraph [0066], lines 6-8; paragraph [0127], lines 13-16: data flow flooding capability)

It would have been obvious to one of ordinary skill in the art to modify Katz-Bearden as taught by McLampy to enable the capability to flood said firewall. One of

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ordinary skill in the art would have been motivated to employ the teachings of MeLampy in order to enable the efficient interoperation of a network type switch based on standards for networks communications interoperability. (see MeLampy paragraph [0027], lines 9-15)

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlton V. Johnson whose telephone number is 571-270-1032. The examiner can normally be reached on Monday thru Friday , 8:00 - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's



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supervisor, Nasser Moazzami can be reached on 571-272-4195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Carlton V. Johnson  
Examiner  
Art Unit 2136

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C. J.  
CVJ

November 13, 2007

11/26/07